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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/586,656	06/03/2000	Takeshi Sano	00-371	7528

7590 06/19/2002

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EXAMINER

HODGES, MATTHEW P

ART UNIT

PAPER NUMBER

2879

DATE MAILED: 06/19/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/586,656

Applicant(s)

SANO, TAKESHI

Examiner

Matt P Hodges

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1,4-7 and 11-28 is/are rejected.
- 7) ☒ Claim(s) 2-3, and 8-10 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 June 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Response to Amendment

The Amendment, filed on 06/03/2000, has been entered and acknowledged by the Examiner.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 4-6, 7, 11-13, 15-17, 20-26, and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Komoto et al (US 6,340,824) in view of Arakawa et al. (JP 359208759A).

Regarding claims 1, 4, and 7, Komoto discloses (see figure 41) a semiconductor light emitting device with a base (110), a light emitting element (990) and a coating material (142E) made of a dipping resin containing a fluorescent material. (Column 28 lines 50-65). Komoto fails to specify the coating being made of either a transparent polymetaloxane or ceramic, however, Arakawa discloses a coating for a semiconductor light emitting device made of an inorganic polymer material composed of a single metal alcoxide in order to increase moisture resistance. It has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416. Thus, it would have been obvious to one having ordinary skills in

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the art at the time the invention was made to have the device as disclosed by Komoto comprising an inorganic polymer coating made from the metal alcoxide as disclosed by Arakawa, since the selection of known materials for a known purpose is within the skill of the art.

Regarding claims 5 and 6, here the Applicant is claiming the product of a polymetaloxane coating formed from a metal alcoxide including a method (i.e. a process) of making the coating, consequently, claims 5 and 6 are considered "product-by-process" claims. In spite of the fact that a product-by-process claim may recite only process limitations, it is the product and not the recited process that is covered by the claim. Further, patentability of a claim to a product does not rest merely on the difference in the method by which the product is made. Rather, is the product itself which must be new and not obvious. As such, no patentable weight has been given to the process recited in claims 5 and 6 (see MPEP 2113).

Regarding claims 11-13 and 15, Komoto discloses (see figure 41) a semiconductor light emitting device as described in the rejection of claim 1 above and additionally states that the coating material (142E) covers the entire light emitting device (990) and fills the cavity created from the lead base (110). (Column 29 lines 19-23).

Regarding claims 16-17 and 20-22, Komoto discloses (see figure 41) a semiconductor light emitting device as described in the rejection of claim 1 above, and additionally states that the coating material (142E) contains a fluorescent substance for converting the majority of the light generated by the semiconductor element into a different wavelength. (Column 29 lines 19-23). The light emitting semiconductor (990) is constructed from a gallium nitride compound (Column 29 lines 3-6) and emits ultraviolet light shorter than 380nm. (Column 29 lines 23-25). The secondary light emitted from the fluorescent substance is in the visible region and thus at a

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longer wavelength than the emitted light from the semiconductor (990). (Column 29 lines 14-16).

Regarding claims 23-26, Komoto discloses (see figure 41) a semiconductor light emitting device as described in the rejection of claim 1 above and additionally states that the coating material (142E) is covered by a molding resin (140E). (Column 28 lines 55-56). The molding resin or plastic is an encapsulant that acts as a binder for the internal components and serves to focus the emitted light through a lens affect.

Regarding claim 28, Komoto discloses (see figure 41) a semiconductor light emitting device as described in the rejection of claim 1 above. The device contains external terminals (110 and 120) where one of the terminals (110) forms a concavity that houses the semiconductor (990) and fluorescent resin (142E). The two terminals are electrically connected to the device by the wires (130). The entire device is surrounded by an encapsulant that acts as a binder for the internal components. (Column 28 lines 50-65).

Claims 14 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Komoto et al (US 6,340,824) in view of Arakawa et al. (JP 359208759A) as applied to claim 1 above, further in view of Oshio et al. (US 6,274,890), and further in view of Latz (US 5,043,716).

Regarding claims 14 and 27, Komoto discloses (see figure 41) a semiconductor light emitting device as described in the rejection of claim one above. Komoto however does not specify the use of an insulative substrate between the diode and the lead frame, where the insulative substrate has a concavity in the substrate for the coating. Oshio however discloses (see figure 15) the use of an insulative substrate (10) in the form of a molded resin. The molded resin forms the cavity (10a) for the applied coating and acts as the base for the semiconductor

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element. (Column 5 lines 43-52). Substituting the insulated substrate with build in cavity for the lead frame allows for the use in applications such as printed circuit boards as evidenced by Latz (US 5,043,716) (Column 1 lines 10-14) where pouring the transparent coating into the cavity instead of freely on top of the element allows for easier and cleaner installation, therefore expanding the usability of the semiconductor light emitting device. Thus, it would have been obvious at the time the invention was made to a person having ordinary skills in the art to incorporate the use of an insulative substrate with cavity, as disclosed by Oshio, into the semiconductor light emitting device as disclosed by Komoto and Arakawa in the rejection of claim one above, in order to expand the usability of the device onto printed circuit boards.

Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Komoto et al (US 6,340,824) in view of Arakawa et al. (JP 359208759A) as applied to claim 1 above, and further in view of McKenna, Jr. et al. (US 4,234,660).

Regarding claim 18, Komoto discloses (see figure 41) a semiconductor light emitting device as described in the rejection of claim 1 above. Komoto however does not specify the use of polymetaloxane adhesive between the semiconductor light emitting element and the base. McKenna however discloses the use of a polymetaloxane adhesive for bonding various substances including substrates. (Column 1 lines 19-21). These adhesive compositions possess little or no color and exhibit improved cohesive strength without loss of tack thus creating a stronger bond that is ideal for optical systems. (Column 1 lines 55-59). Thus, it would have been obvious at the time the invention was made to a person having ordinary skills in the art to incorporate the use of a polymetaloxane adhesive, as disclosed by McKenna, into the

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semiconductor light emitting device as disclosed by Komoto and Arakawa in the rejection of claim one above, in order to increase the bonding strength and provide a colorless adhesive.

Allowable Subject Matter

Claims 2-3 and 8-10 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

Regarding claim 2, the references of the Prior Art of record fails to teach or suggest the combination of the limitations as set forth in claim 2, and specifically comprising the limitation of a glass coating material.

Regarding claim 3, the references of the Prior Art of record fails to teach or suggest the combination of the limitations as set forth in claim 3, and specifically comprising the limitation of a gel state coating material based on the siloxane bond.

Regarding claim 8, the references of the Prior Art of record fails to teach or suggest the combination of the limitations as set forth in claim 8, and specifically comprising the limitation of a coating composed of a ceramic formed from a ceramic precursor.

Regarding claim 9, the references of the Prior Art of record fails to teach or suggest the combination of the limitations as set forth in claim 9, and specifically comprising the limitation of a ceramic coating based on a polysilazane precursor.

Regarding claim 10, the references of the Prior Art of record fails to teach or suggest the combination of the limitations as set forth in claim 10, and specifically comprising the limitation of a coating composed of a ceramic.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Ishinaga (US 6,355,946) discloses the use of a semiconductor element directly mounted to the insulative substrate.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matt P Hodges whose telephone number is (703) 305-4015. The examiner can normally be reached on 7:30 AM to 4:00 PM M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel can be reached on (703) 305-4794. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7382 for regular communications and (703) 308-7382 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

mph *W*
June 14, 2002

[Signature]
VIP PATEL
PRIMARY EXAMINER